

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (cancelled)

2. (currently amended) ~~The liquid discharge head of Claim 1, A liquid discharge head, comprising:~~
liquid chambers for housing liquid;
a piezoelectric element configured so that a plurality of layers including a piezoelectric layer, an electrode layer and a diaphragm layer are laminated, the piezoelectric element being deformed to a laminating direction so that a capacity of the liquid chambers is reduced and discharging the liquid in the liquid chambers; and
a liquid chamber member made of an electroless plating material provided on one side of the piezoelectric element in the laminating direction, the liquid chamber member having liquid chamber holes for composing the liquid chambers opened on a side of the piezoelectric element and a surface opposite to the piezoelectric element,
wherein at least a part on the surface of the piezoelectric element on the side of the liquid chamber member is composed of a nucleus forming assistance material contained layer containing a material for assisting nucleus forming for growth of plating at the time of forming the liquid chamber member on the surface by means of the electroless plating;

wherein the nucleus forming assistance material contained layer is patterned correspondingly to a position of the liquid chamber member other than the liquid chamber holes.

3-6. (cancelled)

7. (original) ~~The liquid discharge head of Claim 1, A liquid discharge head,~~
comprising:

liquid chambers for housing liquid;
a piezoelectric element configured so that a plurality of layers including a
piezoelectric layer, an electrode layer and a diaphragm layer are laminated, the
piezoelectric element being deformed to a laminating direction so that a capacity of the
liquid chambers is reduced and discharging the liquid in the liquid chambers; and
a liquid chamber member made of an electroless plating material provided on
one side of the piezoelectric element in the laminating direction, the liquid chamber
member having liquid chamber holes for composing the liquid chambers opened on a
side of the piezoelectric element and a surface opposite to the piezoelectric element,
wherein at least a part on the surface of the piezoelectric element on the side of
the liquid chamber member is composed of a nucleus forming assistance material
contained layer containing a material for assisting nucleus forming for growth of plating
at the time of forming the liquid chamber member on the surface by means of the
electroless plating;

wherein the entire surface of the piezoelectric element on the side of the liquid chamber member is composed of the nucleus forming assistance material contained layer.

8. (original) The liquid discharge head of Claim 7, wherein:
the diaphragm layer contains the material for assisting the nucleus forming, and
the diaphragm layer serves also as the nucleus forming assistance material
contained layer.

9. (cancelled)

10. (currently amended) The method for manufacturing the liquid discharge head of Claim 9, A method for manufacturing a liquid discharge head, the liquid discharge head having liquid chambers for housing liquid, and a piezoelectric element configured so that a plurality of layers including a piezoelectric layer, an electrode layer and a diaphragm layer are laminated, the piezoelectric element being deformed to a laminating direction so that a capacity of the liquid chambers is reduced and discharging the liquid in the liquid chambers, the manufacturing method comprising:
the laminate forming step of laminating at least the piezoelectric layer, the electrode layer and the diaphragm layer so as to form a laminate on a substrate;
the liquid chamber member forming step of forming a liquid chamber member on a surface of the laminate opposite to the substrate by means of electroless plating, the

liquid chamber member having liquid chamber holes for composing the liquid chambers being opened on a side of the laminate and a surface opposite to the laminate; and
the substrate removing step of removing the substrate after the liquid chamber member forming step;

wherein the liquid chamber member forming step includes:

the mold forming step of forming molds which are patterned correspondingly to a position of the liquid chamber holes of the liquid chamber member on the surface of the laminate opposite to the substrate;

the side wall forming step of forming a side wall of the liquid chamber holes on the liquid chamber member on a portion on the surface of the laminate opposite to the substrate where the molds do not exist by means of electroless plating; and

the liquid chamber hole forming step of removing the molds after the side wall forming step so as to form the liquid chamber holes.

11. (original) The method for manufacturing the liquid discharge head of Claim 10, wherein at the mold forming step, the molds are formed by photosensitive resist.

12. (original) The method for manufacturing the liquid discharge head of Claim 10, wherein:

after the mold forming step, a nucleus forming assistance material contained layer containing a material for assisting nucleus forming for growth of the plating at the time of forming the liquid chamber member by means of the electroless plating is

formed on a portion on the surface of the laminate opposite to the substrate where the molds do not exist, and

at the side wall forming step, the side wall of the liquid chamber holes are formed on the nucleus forming assistance material contained layer by the electroless plating.

13. (original) The method for manufacturing the liquid discharge head of Claim 12, wherein the material for assisting the nucleus forming is metal having catalysis with respect to reduction reaction of a plating material.

14. (original) The method for manufacturing the liquid discharge head of Claim 13, wherein:

the plating material is Ni, and

the metal having catalysis with respect to the reduction reaction of the plating material is at least one selected from a group of Ni, Fe and Pd.

15. (original) The method for manufacturing the liquid discharge head of Claim 12, wherein the material for assisting the nucleus forming is metal having larger ionization tendency than the plating material.

16. (original) The method for manufacturing the liquid discharge head of Claim 15, wherein:

the plating material is Ni, and

the metal having larger ionization tendency than the plating material is at least one selected from a group of Ti, Mg, Al and Zn.

17. (currently amended) The method for manufacturing the liquid discharge head of ~~Claim 9, 10~~, wherein:

at the laminate forming step, the entire surface of the laminate opposite to the substrate is composed of a nucleus forming assistance material contained layer containing a material for assisting nucleus forming for growth of the plating at the time of forming the liquid chamber member by means of the electroless plating, and

at the liquid chamber forming step, the liquid chamber member is formed on the surface of the laminate opposite to the substrate by the electroless plating.

18. (original) The method for manufacturing the liquid discharge head of Claim 17, wherein at the laminate forming step, the entire surface of the laminate opposite to the substrate is composed of the diaphragm layer which contains the material for assisting the nucleus forming so as to serve also as the nucleus forming assistance material contained layer.